

The present application is a Rule 53(d) continued prosecution application of parent Serial No. 08/770,647. This preliminary amendment responds to the rejections in the final office action dated February 14, 1997 in the parent case.

Claim 22 presently stands rejected under 35 U.S.C. §103 as being unpatentable over Miller (U.S. Patent No. 3,819,860) in view of Gauthier (U.S. Patent No. 4,520,236), McCabe (U.S. Patent No. 3,671,685) and further in view of Killion (U.S. Patent No. 4,677,679).

Claims 23 and 24 presently stand rejected under 35 U.S.C. §103 as being unpatentable over McCabe (U.S. Patent No. 3,671,685) in view of Langford (U.S. Patent No. 3,408,461) and further in view of Killion (U.S. Patent No. 4,677,679). Claim 24 also stands rejected under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Applicants have amended claim 24 to overcome the 35 U.S.C. §112, second paragraph rejection. Applicants have also amended claim 22 for clarification. In addition, Applicants are submitting new claim 25-34, which recites additional features of Applicants' invention.

With regard to the 35 U.S.C. §103 rejections of claims 22-24, Applicants respectfully traverse. Applicants submit the following arguments and evidence in support.

I. Miller In Combination with Gauthier, McCabe and Killion Does Not Teach the Invention of Claim 22

Claim 22 as amended recites, among other elements, an insert formed from a resilient material which is disposed between a receiver and at least one interior wall of a unitary

housing to inhibit movement of the receiver and "to provide an acoustic seal between the hollow body portion and the elongated tubular portion" of the unitary housing. Claim 22 also recites "a resilient sealing member disposed over the hollow elongated tubular portion for sealing with an ear canal of a wearer" and "the earphone extending into and substantially acoustically sealing the ear canal of the wearer when inserted." This claim was rejected as obvious in view of the combination of Miller, Gauthier, McCabe and Killion. However, the combination of these references does not teach Applicant's claimed elements but rather teaches away from the present invention.

Specifically, Miller discloses an audio transceiver for transmitting to *and receiving from* the ear canal. The Miller device comprises a support body 11 including an elongated protruding portion 11a which is inserted and received in the outer ear canal of a wearer (col. 2, lines 45 et seq.). A receiver 18 and a transmitter 21 are mounted directly on support body 11 such that the ends of the receiver 18 and transmitter 21 are in contact with support body 11 (see Fig. 2). Support body 11 further includes an acoustical chamber 36 and a rubber or elastic connector 38 (col. 3, lines 21-22 and col. 4, lines 35-36; Fig. 2), the ends of which mate with the receiver 18 and transmitter 21. The Miller device further includes a protective envelope 29 of relatively hard plastic material that is attached directly to support body 11 (col. 3, lines 64 et seq.). The envelope 29 contains a body of liquid 31 for preventing vibrations from entering through the shell of envelope 29 (col. 3, line 67 – col. 4, line 4). Thus, support body 11 mounts the receiver 18, transmitter 21, and the protective envelope 29 directly thereon.

As mentioned above, the Miller device is designed for two way communication and is used, for example, in environments having a high degree of background noise, such as in aircraft (see Background Section). Audio is received by a wearer (e.g., a pilot) via the receiver 19, the chamber 36, and the passageway 23. The pilot is also, however, able to transmit audio using this device. When the pilot speaks, the sound carries upwardly through the ear canal and passes into filter device 24, rubber or elastic connector 38, and eventually the transmitter 28 for transmission (col. 4, lines 26 et seq.). Thus, the Miller device is designed to solve problems associated with two-way communication in noisy environments, and not to achieve high fidelity sound reproduction as in the present invention.

The Examiner has asserted, however, that it would have been obvious to combine the Miller reference with Gauthier, McCabe and Killion to render Applicant's invention obvious. Applicants respectfully traverses.

A. Miller Combined With Gauthier

First, the Examiner states that it would have been obvious for one skilled in the art to provide the acoustic foam material 36 from Gauthier as a substitute for the body of liquid in the Miller reference. Even assuming that such a simple substitution could or would be made by one of ordinary skill in the art, the resulting device still has the receiver mounted directly on the support body 11, providing direct contact between the end of the receiver and the chamber 36. Consequently, the resulting device does not teach or suggest Applicant's claimed invention and specifically, for example, the claim elements "a receiver ... having a sound outlet port extending partially into the hollow elongated tubular portion of the housing" and an insert

"assisting to provide an acoustic seal between the hollow body portion and the elongated tubular portion."

In addition, if such a substitution were made, the Miller device would likely be inoperative. Specifically, the Gauthier reference teaches that the material 36 "is packed around the receiver including the sound emitting opening 34 and suspends the receiver within chamber 36" (see col. 3, lines 22 et seq.) (emphasis added). The receiver 32 also faces divider wall 30 away from the opening of the ear canal (col. 3, lines 20-22). Also, the interior dimensions of the chamber 26 form an acoustic horn for resonating sound energy (see col. 3, line 51). Thus, sound energy must pass through the material 36 in order for the Gauthier device to function properly. The purpose of the liquid in Miller, however, is to "effect substantial attenuation and dampening of spurious sound waves and vibrations entering through the shell of envelope 29 (col. 4, lines 2-4)." If such material from Gauthier were used in place of the liquid in Miller, external noise would likely penetrate the protective envelope 29, resonate through the material and adversely affect the transceiving functions of the elements 19 and 21. This is particularly true in view of the fact that the Miller device is specifically designed for operation in environments having high background noise (as mentioned above). Thus, a person of ordinary skill in the art would never look to substitute the material 36 in Gauthier for the liquid in the Miller reference.

Furthermore, even if the Miller reference were modified as taught by Gauthier, Applicant's invention would still not be met. As mentioned above, Gauthier teaches that the material 36 is "packed around the receiver including the sound emitting opening 34 and

suspends the receiver within the chamber 36" (see col. 3, lines 22 et seq.). The resulting device would not, therefore, teach or suggest Applicant's claimed invention and specifically, for example, Applicant's claimed element of "a receiver ... having a sound outlet port extending partially into the hollow elongated tubular portion of the housing." Further, the resulting device would not teach or suggest "an insert ... assisting to provide an acoustic seal between the hollow body portion and the elongated tubular portion." As discussed more fully above, the Gauthier device requires that sound energy from the sound emitting opening 34 resonate through material 36 and throughout the chamber 26.

Moreover, in order for references to be combined to render obvious a claimed invention, the references must suggest the combination of their teachings. See. e.g., In re Geiger, 815 F.2d 686, 688, 2 U.S.P.Q. 2d 1276, 1278 (Fed. Cir. 1987) (combination of prior art references erroneous because there is "no teaching, suggestion or incentive supporting the combination"); In re Regel, 526 F.2d 1399, 1403 n. 6, 188 U.S.P.Q. 132, 139 n. 6 (CPA 1975) (for an obviousness determination to stand, "there must be some logical reason apparent from concrete evidence of record which justifies a combination..."); In re Gordon, 733 F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984)(the mere fact that prior art can be modified does not make "the modification obvious unless the prior art suggest[s] the desirability of the modification"). There is nothing in Miller or Gauthier, however, to suggest the combination of their teachings. In fact, Miller and Gauthier actually teach away from their combination. As mentioned above, a person of ordinary skill in the art would not substitute material from one device which requires that the material permit resonation of sound energy

for material in another device which requires that the material inhibit resonance of sound energy. Thus, because there is nothing in Miller or Gauthier to suggest the combination of their teachings and these references suggest that one should not combine their teachings, Applicants respectfully submit that they do not render obvious the invention of claim 22 under 35 U.S.C. §103.

B. Miller Combined With Gauthier and McCabe

Second, the Examiner states that it would have been obvious to one skilled in the art to provide a sealing member, as taught by McCabe, disposed over the tubular portion of Miller. However, as discussed above, the Miller device is designed for two-way communication. In order for the Miller device to function properly, a wearer's spoken sound energy must resonate into the wearer's ear canal before it can be transmitted via the transmitter 28. If a sealing member, as taught by McCabe, were placed over the elongated protruding portion 11a of Miller, as the Examiner suggests, for "substantially acoustically sealing the ear canal of the wearer", as claimed by Applicant, sound energy resonance into the ear canal of the wearer would likely be hindered. As a result, the wearer may not be able to properly communicate via the transmitter 28. Thus, a person of ordinary skill in the art would likely never look to place a sealing member over the tubular portion of Miller.

Moreover, as discussed above, in order for references to be combined to render obvious a claimed invention, the references must suggest the combination of their teachings. There is nothing in Miller, Gauthier, or McCabe, however, to suggest their combination. In fact, for the reasons already discussed above, these references actually teach away from their

combination. Thus, because there is nothing in these references to suggest the combination of their teachings and they in fact teach away from such a combination, Applicants respectfully submit that they do not render obvious the invention of claim 22 under 235 U.S.C. §103.

C. Miller Combined With Gauthier, McCabe, and Killion

Finally with regard to claim 22, the Examiner states that it would have been obvious to one skilled in the art to provide a network, as taught by Killion, in the earphone of Miller in view of Gauthier and McCabe in order to provide a high quality sound for the earphone. However, Applicants do not claim the specific network of Killion nor a high quality sound per se. Rather, Applicants claim an earphone having a unique combination of elements that achieves high fidelity sound. Applicants respectfully submit that the cited references, either alone or in combination, do not teach or suggest Applicants' invention.

Thus, Applicants respectfully submit that claim 22 is not obvious under 35 U.S.C. §103 in view of the combination cited by the Examiner.

II. McCabe in Combination with Langford and Killion Does Not Teach the Invention of Claims 23 and 24

Claims 23 and 24 recite, among other elements, "a receiver ... having a sound outlet port extending partially into the hollow elongated tubular portion of the housing." Claims 23 and 24 also recite a damper, with "sound from the sound outlet port being conducted to the damper by the hollow elongated tubular portion of the housing." Claims 23 and 24 further recite "the earphone extending into and substantially acoustically sealing the ear canal of the

wearer when inserted." These claims were rejected as obvious in view of the combination of McCabe, Langford and Killion. However, the combination of these references does not teach Applicants' claimed elements, but rather teaches away from the present invention.

Specifically, McCabe discloses a headset having two sound conducting tubes, 1a and 1b which are secured to earpieces 2a and 2b (col. 2, lines 42 et seq.). Each earpiece is formed with a short projection 7a and 7b, through which sound-conducting channel 6 extends (col. 2, lines 48-50). Earpieces 2a and 2b are also provided with an internal chamber in the path of sound conducting channel 6 which is adapted to receive a transducer 5 (col. 2, lines 65-68).

The Examiner has asserted that it would have been obvious to combine the McCabe reference with Langford and Killion to render Applicants' invention obvious. Applicants respectfully traverse.

A. McCabe Combined With Langford

The Examiner states that it would have been obvious to one skilled in the art to provide the damper, as taught by Langford, in the hollow elongated tubular portion of the McCabe reference. However, even assuming that one skilled in the art would make such a combination, the resulting device still does not teach or suggest Applicants' claimed invention and specifically, for example, "a receiver ... having a sound outlet port extending partially into the hollow elongated tubular portion of the housing."

In addition, the resulting device does not teach or suggest an earphone "substantially acoustically sealing the ear canal of the wearer when inserted." In fact, the combination of McCabe and Langford teaches away from sealing the acoustic path. The Langford specification



states at column 3, lines 33-37, that a second opening 45 is provided in the closed end of the shell which "serves to vent the sealed region of the ear canal to the outside atmosphere to compensate for changes in ambient atmospheric pressure." As seen in Fig. 2 of Langford, the damper 41 is vented to the outside by opening 45, preventing the acoustic sealing of the ear canal of a wearer.

Moreover, and again as discussed above, in order for references to be combined to render obvious a claimed invention, the references must suggest the combination of their teachings. There is nothing in McCabe or Langford to suggest the combination of their teachings. Further, even if they are combined, the references teach away from the present invention. Thus, Applicants respectfully submit that these references in combination do not render obvious claims 23 and 24 under 35 U.S.C. §103.

B. McCabe Combined With Langford And Killion

The Examiner also states that it would have been obvious to one skilled in the art to provide a network circuit or the fitter, as taught by Killion, in the earphone of McCabe in view of Langford in order to provide high quality sound for the earphone. Again, however, Applicants do not claim the specific network of Killion nor a high quality sound per se. Rather, Applicants claim an earphone having a unique combination of elements that achieve high fidelity sound. Applicants respectfully submit that the cited references, either alone or in combination, do not teach or suggest Applicants' invention.

### III. Evidence of Non-Obviousness Supports Allowability of Applicant's Claims

The Applicants are believed to be the first to have successfully designed and built a high-fidelity insert earphone. The Applicants unique combination of elements compensates for loss of external ear resonance and results in an earphone which achieves high fidelity reproduction.

One important indicator of the non-obviousness of an invention is the failure of others to achieve the invention. See, e.g., *Graham v. John Deere Co.*, 383 U.S. 1, 36, 148 U.S.P.Q. 459 (1966). Another important indicator of the non-obviousness of an invention is praise of the invention by experts. See, e.g., *Litton Systems Inc. v. Honeywell, Inc.*, 39 U.S.P.Q.2d 1321, 1327 (1996). To Applicants' knowledge, none of the prior art references, either alone or in combination, achieve high fidelity reproduction as does Applicants' invention. In addition, Applicants invention has been met with high praise from experts in the audio industry. In fact, many experts believe that Applicants earphones are perhaps the best available on the market and succeed where many others have failed.

For example, an article from the December 1994 issue of *Stereo Review* states:

While other headphone companies use an ear-canal/diffuse-field match as their design ideal, no other phones comes close to realizing it as the Etymotic ER-4S, which is specifically designed to operate in the predictable and controlled sonic environment created by earplugs. The result is sound that's more neutral and uncolored than from any headphones or earphones I've ever used, though a few very expensive —and hardly portable — electrostatic models have come close.

\* \* \*

With the extreme noise isolation provided by its earplug-based design and its reference-standard sound quality, the ER-4S is the closest thing yet to a direct sonic connection to the brain.

See Exhibit A. Other expert reviews of Applicants invention include the following:

These are the finest earphone or headphones I've ever heard ...These tiny units deliver reference-quality sound that is astonishing...Quite simply, these are the most transparent, revealing 'phones I've had the pleasure to hear.

- High Performance Review, Summer 1994

If you are looking for earphones that reduce outside noise, you will find none better than ER-4s....the bass is phenomenal; you will hear low-frequency sounds that you didn't even think were possible...overall sound quality rating of "excellent."

- Audio, December 1993

"Wow!"...If you're not planning on staying home ... and want to take high-quality listening into places where it just hasn't been possible before – well, I'm not even sure you have another choice [than the ER-4S]. It really *is* that simple.

- Stereophile, Vol. 18, No. 7, July 1995

They [the ER-4S] offer more isolation from outside sounds than any other phones that I know of ... the Etymotic ER-4S earphones are among the least colored, most detailed earphones or headphones I have ever heard.... These are the most transparent phones I have had the pleasure to audition.

- Pro Audio Review, October 1997

These reviews are attached hereto as Exhibits B through E, respectively.

Applicants submit that the above evidence further demonstrates the non-obviousness of Applicants invention and supports allowability of the pending claims.


Applicants submit new claims 25 – 34 and believe these claims are allowable for the same reasons as discussed above with respect to claims 22-24.

Applicants respectfully submit that claims 22 – 34 are allowable. If the Examiner disagrees, Applicants request that the Examiner telephone the undersigned at (312) 707-8889.

A Notice of Allowability is courteously solicited.

Respectfully submitted,

Dated: December 16, 1997

By:   
Christopher C. Winslade  
Reg. No. 36,308

McAndrews, Held & Malloy, Ltd.  
500 West Madison – 34<sup>th</sup> Floor  
Chicago, Illinois 60661  
(312) 707-8889